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SLUDGE PRESS CAKE INCINERATION IN A FLUOSOLID OVEN BY H. BLANK, AND M. MAULAZ. DISCUSSION

J. B. Farrell

Federal Water Quality Administration
Cincinnati, Ohio

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Sludge Press Cake Incineration in a Fluosolid Oven

H. BLANC and M. MAULAZ
Department of Public Health
Lausanne, Switzerland

DISCUSSION by J. B. Farrell, FWQA, Cincinnati, Ohio

I enjoyed reading this informative report. There are some interesting differences between the process described and what is the usual practice in this country. Some differences are:

a) The feed is filter press cake, which is about 50 percent moisture, compared to about 70 percent moisture for the rotary vacuum filter cake used as feed to a Fluosolids oven in this country.

b) Feed is charged into the freeboard above the bed, instead of by a screw feeder below the bed.

c) Cyclones and an electrostatic precipitator remove the particulate ash from the combustion product gases, instead of a wet scrubber for this purpose.

d) Energy is recovered from the combustion gases by means of a waste heat boiler and a steam-driven turbo-generator. In this country, energy recovery is not usually practiced.

The major effect of these differences would be that this unit would have a higher capital cost, higher labor and maintenance cost, but a lower fuel cost than a unit following the usual United States design.

The authors indicate a utilization factor of about 70 percent. It would be interesting to learn from the authors the length of the period of continuous operation. An operating period which did not coincide with the work week (e.g., startup on Monday, shutdown on Friday) could cause difficult operating and maintenance problems.

The final costs given appear to be the costs for incineration alone without dewatering. These costs are far higher than the costs usually quoted in this country. It would be worthwhile to study in greater detail the costs of this plant and a comparable United States plant to arrive at an explanation of the difference.

Some difficulty was encountered in reading the paper because of the presence of slashes (/) where they did not belong, e.g. hp/hr instead of hp-hr, and cost/ton/dry material incinerated. It is presumed that N ft.^{3} min. means gas at standard temperature and pressure (0 C and 1 atmosphere?)

As noted above, the paper provides much information on fluosolids incineration, most of which is not available elsewhere.

AUTHORS' REPLY to J. B. Farrell

In answer to the discussor's noted differences between U.S. practice and the process described in this paper, the following is offered:

a) If the lower limit of net heat value of 540 Btu/lb is obtained with 70 percent H_2O, the system should work.

b) Feeding above the freeboard has an advantage in that the feeder parts are not in the hot zone.

c) The use of dust precipitation facilities was dictated by locally imposed air pollution control regulations. Other methods could be used if they met the particular local codes that applied.

d) Boilers are not necessary. A boiler reduces operating costs if the steam is used, for instance, to generate power as in the Lausanne plant.

The complicated installation with higher first cost was required at Lausanne by local clean air regulations.

The plant at Lausanne is operated continuously 24 hr/day for varying periods every two months. As the supply of sludge is exhausted operation is stopped. Sludge is then accumulated and stored for two months after which time the plant is restarted. This stop-and-go operation has caused no maintenance problems.

The final cost of $123 per ton includes dewatering. The author agrees that a comparative study of Swiss-American costs would be interesting to undertake.

"Normal" means 0° C and 760 mm of mercury pressure.

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MISCELLANEOUS DISCUSSION

Question: What device do you use to remove chlorine and other corrosive gases from the stack effluent?

Answer: The greater part of the ferric chloride is removed in the filtrate from the press. The stack gas contains practically no chlorides although the author has no concrete data available that supports this opinion. The stack is only about one meter high but there have been no complaints from the areas surrounding the plant.

Question: What capacity do you consider suitable for storage in the pit?

Answer: In the Lausanne installation 2000 to 2500 m^3 total storage capacity has proved sufficient and satisfactory.

Question: What type of shredders or pulverization should be incorporated into a plant?

Answer: Anything that gives 3 cm size particles.